

ART 34 AMDT

15

CLAIMS

1. An ADP-Glucose transporter protein, or a modification or fragment thereof capable of ADPG transport activity comprising at least one amino acid sequence selected from the group of:

- | | | |
|-------|----------------|----------------|
| (i) | SMPLNAAVKM | (SEQ ID NO. 1) |
| (ii) | GAXXXETAWACGXA | (SEQ ID NO. 2) |
| (iii) | NFRYTNFAX | (SEQ ID NO. 3) |

wherein X indicates any amino acid and the other letters represent conventional single letter codes for amino acids.

2. The ADP-Glucose transporter protein according to claim 1 wherein the protein comprises each of the amino acid sequences (i) - (iii).

3. The ADP-Glucose transporter protein according to claim 1 or 2 wherein the protein has a molecular weight of about 38kDa.

4. A DNA molecule encoding for a protein according to ~~any one of claims 1-3~~, said DNA molecule being capable of being transcribed to lead to the expression of said protein.

5. A plant cell transformed with the DNA molecule according to claim 4.

6. A method of regulating starch production from a plant, plant tissue or plant cell comprising modulating activity of the anyloplast membrane ADP-Glucose transporter protein in said plant, plant tissue or plant cell.

7. The method according to claim 6 wherein the activity of the ADP-Glucose transporter is decreased.

16-06-2000

GB 009900727

16

ART 34 AMDT

8. The method according to claim 7 wherein starch is produced with a higher proportion of amylopectin than found in starch from an unmodulated plant, plant tissue or plant cell.
9. The method according to claim 7 wherein "waxy" starches are produced for use as thickening agents in food and coatings.
10. The method according to claim 6 wherein activity of the ADP-Glucose transporter is increased.
11. The method according to claim 10 wherein the yield of starch is increased relative to an unmodulated plant, plant tissue or plant cell.
12. The method according to claim 10 or 11 wherein starch is produced with a higher proportion of amylose than found in starch from an unmodulated plant, plant tissue or plant cell.
13. The method according to claim 12 wherein starch is produced with increased viscosity and gel strength relative to starch from an unmodulated plant, plant tissue or plant cell.
14. The method according to claim 13 wherein the starch is for incorporation in a baked food which goes stale less quickly than baked food containing starch derived from an unmodulated plant, plant tissue or plant cell.
15. The method according to any one of claims 10 - 14 wherein the plant, plant tissue or plant cell is transformed with the DNA molecule according to claims 4.

09646532.122100

- 16-06-2000

GB 009900727

ART 34 AMDT

17

16. A 38kDa ADP-Glucose transporter protein, capable of ADPG transport activity comprising at least one amino acid sequence selected from the group of:

- | | | |
|-------|----------------|----------------|
| (i) | SMPLNAAVKM | (SEQ ID NO. 1) |
| (ii) | GAXXXETAWACGXA | (SEQ ID NO. 2) |
| (iii) | NFRYTNFAX | (SEQ ID NO. 3) |

wherein X indicates any amino acid and the other letters represent conventional single letter codes for amino acids; and

the protein being obtainable by isolating amyloplast membranes, solubilizing said membranes and isolating protein fractions according to the protocol of Example 1.

09646532-122100